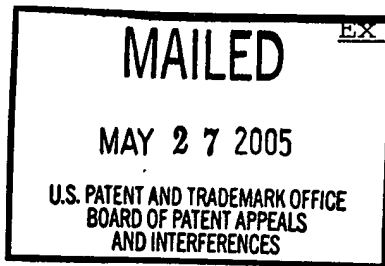


The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES



Ex parte TAKEHIRO KATA and MASARU MIURA

Appeal No. 2005-0246
Application No. 09/431,154

HEARD: April 20, 2005

Before PAK, WALTZ, and TIMM, Administrative Patent Judges.
WALTZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the primary examiner's final rejection of claims 1, 2 and 4 through 6, which are the only claims pending in this application. We have jurisdiction pursuant to 35 U.S.C. § 134.

According to appellants, the invention is directed to a vulcanizing mold and vulcanizing method for pneumatic tires, where the upper and lower tread mold members are constituted of the upper and lower segments which can be radially displaced to decrease or increase the diameter of the mold by virtue of the operation of the cam ring, thereby minimizing the required

Appeal No. 2005-0246
Application No. 09/431,154

displacement of the respective segments radially outward (Brief, pages 2-5). A copy of illustrative independent claim 1 is attached as an Appendix to this decision.

The examiner relies on the following references as evidence of obviousness:

Allitt	3,553,789	Jan. 12, 1971
Materick	3,806,288	Apr. 23, 1974
Le Moullac (Le Moullac '823)	3,990,823	Nov. 09, 1976
Le Moullac (Le Moullac '463)	4,289,463	Sep. 15, 1981
Miyata et al. (Miyata)	5,208,044	May 04, 1993
Nara et al. (Nara) (filed Oct. 08, 1998)	6,066,283	May 23, 2000
Herbert et al. (Herbert) (published British Patent Specification)	1 248 891	Oct. 06, 1971

The claims on appeal stand rejected under 35 U.S.C. § 103(a) as unpatentable over Herbert in view of Miyata, further in view of any one of Materick, Le Moullac '823, Le Moullac '463, Nara, and Allitt (Answer, page 3). We reverse the examiner's rejection on appeal for the reasons stated below.

OPINION

The examiner finds that Herbert discloses a vulcanizing mold comprising upper and lower sidewall mold members integrally

attached to upper and lower base plates, upper 42 and lower 10 tread mold members indirectly attached to the upper and lower base plates and constituting upper and lower segments (Answer, page 3). The examiner further finds that the single cam ring 43 remains in direct engagement with the upper tread mold member and in indirect engagement, via cooperating projection 81 and recess 34, with the lower tread mold member during displacement of the upper and lower segments (Answer, page 4). Accordingly, the examiner recognizes that Herbert does not disclose that the cam ring simultaneously displaces all of the segments radially inward while the cam ring remains in direct engagement with both upper and lower tread mold members (*id.*). Therefore the examiner applies Miyata for the disclosure of a tire vulcanizing mold where the single cam ring 4, formed of connecting parts 4a and 4b, simultaneously displaces all of the tread mold segments radially inwards while the cam ring remains in direct engagement with both the upper and lower tread mold members (Answer, sentence bridging pages 4-5). From these findings, the examiner concludes that it would have been obvious to one of ordinary skill in this art at the time of appellants' invention to modify Herbert by providing the cam ring in direct engagement with both the upper and lower tread mold members as taught by Miyata "since

such an arrangement would enable a more reliable radially inward movement of the lower tread mold member by applying a force from the outward side ... rather than from the upper side thereof" and since such an arrangement is "equivalent" to the direct engagement of the cam ring with the upper tread mold member and indirect engagement of the cam ring with the lower tread mold member, as disclosed by Herbert (Answer, page 5; see also pages 8-9). We disagree.

When combining the teachings of two or more references, it is incumbent upon the examiner to show specific evidence of a reason, suggestion or motivation to combine the references as proposed. See *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 1342, 41 USPQ2d 1451, 1454 (Fed. Cir. 1997). When determining the patentability of a claimed invention which combines two known elements, "the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. [Citation omitted.]" *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984); see also *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Regardless of the interpretation given to the claimed

term "single cam ring" (Reply Brief, pages 2-3; Answer, page 6), we determine that the examiner has not established any convincing reason, suggestion or motivation to combine the references as proposed (Brief, pages 16-19; Reply Brief, page 4). The examiner has not referred to any basis in the prior art or any technical reasoning to support either motivation to combine the Herbert and Miyata references, namely there is no evidence of record to support the motivation that the arrangement of Miyata is "more reliable" or is "equivalent" to that of Herbert. As correctly argued by appellants (Brief, page 18; Reply Brief, page 4), Herbert teaches that "[d]espite the division of the segments, it is sufficient to have one actuating mechanism which is attached to one [upper] mold part" (page 2, ll. 44-47). The examiner has not provided any convincing evidence or reasoning why one of ordinary skill in this art would have desired the two-part actuating mechanism of Miyata, with each part attached to the corresponding upper and lower mold parts, when Herbert teaches that one actuating mechanism attached to only the upper mold part is sufficient. See *Ex parte Hartmann*, 186 USPQ 366, 367 (Bd. App. 1974).

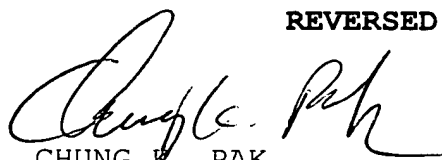
Appeal No. 2005-0246
Application No. 09/431,154

The examiner applies Materick, Le Moullac '823, Le Moullac '463, Nara and Allitt for the teaching of using a spring to urge the tread mold segments radially outward during opening of a tire vulcanization mold (Answer, page 5). Therefore these references do not cure the deficiencies discussed above in regard to the proposed combination of Herbert and Miyata.

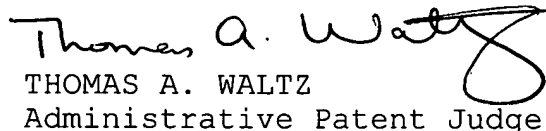
For the foregoing reasons, we determine that the examiner has not established a *prima facie* case of obviousness in view of the reference evidence. Accordingly, we cannot sustain the examiner's rejection of claims 1, 2 and 4-6 under 35 U.S.C. § 103(a) over Herbert in view of Miyata, further in view of Materick, Le Moullac '823, Le Moullac '463, Nata and Allitt.

The decision of the examiner is reversed.

REVERSED



CHUNG K. PAK
Administrative Patent Judge



THOMAS A. WALTZ
Administrative Patent Judge

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) INTERFERENCES

TAW/jrg

Appeal No. 2005-0246
Application No. 09/431,154

TIMM, Administrative Patent Judge

dissenting

Because I conclude that the Examiner has established a prima facie case of obviousness which has not been sufficiently rebutted by Appellants, I respectfully dissent from the decision of my colleagues.

As a first matter, I note that Appellants group claim 6 separately from claims 1, 2, 4, and 5 (Brief, p. 12). I will, therefore, consider claim 6 separately. For the claims that are grouped together, I select claim 1 to represent the issues on appeal.

Claim 1

In my view, the Examiner has provided sufficient evidence and reasoning in support of a reason or motivation to configure the cam ring of Herbert so that it is in direct engagement with both the upper and lower tread mold members during radial displacement of the upper and lower segments of the tread mold members. The Examiner's finding is based on the equivalency of the direct engagement configuration of Miyata with the indirect engagement configuration of Herbert and on the rationale that the direct engagement arrangement would enable a more reliable radial

movement of the lower tread mold member by applying a force from the outward side of the lower tread mold member rather than from the upper side thereof (Answer, p. 5).

Herbert describes a vulcanizing mold for pneumatic tires including a single cam ring (ring 43) with a sloping surface that cooperates with the sloping surfaces of upper segments 42. There is no question that the cam ring is in direct engagement with the upper segments 42 during the radial displacement of the upper and lower segments (Figs. 3-4). The Examiner acknowledges that the cam ring, however, is not in direct engagement with **both** the upper and lower segments as claimed (Answer, p. 4). Rather, Herbert indirectly engages the lower segments by coupling the upper and lower segments together through projections 81 and recesses 34 so that the force on the upper segments by the downward movement of the cam ring not only radially displaces the upper segments but also radially displaces the lower segments therewith (Herbert, p. 5, ll. 78-91).

The Examiner turns to Miyata as evidence that a cam ring which displaces both the upper and lower segments radially through direct engagement with both was known in the art. Miyata describes a vulcanizing mold for tires including a two-piece cam ring. The two-piece cam ring of Miyata acts as a single actuator

to radially displace the upper and lower tread mold segments. Just as the cam ring of Herbert, the cam ring of Miyata translates downward cam ring movement to radial movement of upper and lower segments through cooperating sloping surfaces on the cam ring and the segments of the tread mold members. The difference is that, in Miyata, the cooperating sloping surfaces are extended to the lower segment so that the cam ring directly displaces the lower segment instead of, or in addition to, translating the force through the upper segment.¹

Considering the prior art as a whole and what the references teach as to the slope interactions among the cam ring and mold parts, I agree with the Examiner that the use of a cam ring which directly engages both the upper and lower tread mold segments would have been obvious to one of ordinary skill in the art of tire molds. Whether the actuating force is translated to the lower segment directly or indirectly, the result is the same: the segments simultaneously move radially as the cam ring is lowered. Thus, as determined by the Examiner, the structures are equivalents, the substitution of which would have been obvious to

¹Note that, as pointed out by the Examiner, Miyata describes the use of projections and recesses similar to those of Herbert to couple the upper and lower segments together (Answer, p. 7 citing Fig. 13, col. 3, ll. 12-14 and col. 8, ll. 45-51).

one of ordinary skill in the art. See In re Fout, 675 F.2d 297, 301, 213 USPQ 532, 536 (CCPA 1982). I further conclude that the Examiner's finding that direct engagement would enable a more reliable radial movement than translating the force through the upper mold segment alone is supported by the laws of physics and basic concepts of mechanical engineering. That those of ordinary skill in this art would understand as much flows from the references and the level of skill in the art evidenced by the references. "The suggestion to combine need not be express and 'may come from the prior art, as filtered through the knowledge of one skilled in the art.'" Brown & Williamson Tobacco Corp. v. Philip Morris Inc., 229 F.3d 1120, 1125, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000) (quoting Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 1472, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997)).

Appellants argue that Miyata fails to disclose the features as alleged and relied upon by the Examiner (Brief, p. 15). Particularly, Appellants argue that Miyata discloses a two-piece cam ring (actuator 4) whose pieces individually come into contact with the upper and lower segments (upper and lower sector portions 3a and 3b) (Id.). According to Appellants, the two-piece

arrangement of Miyata is not a single cam ring as claimed (Brief, p. 16).

First, as pointed out by the Examiner, Herbert discloses a single cam ring (Answer, p. 6) and modifying that cam ring to engage both the upper and lower segments with the cooperating slope taught by Miyata would have been obvious to one of ordinary skill in art. The cam ring would, under these circumstances, remain a one-piece cam ring. The fact that the cam ring of Miyata has two pieces would not prevent one of ordinary skill in the art from using the length and slope structural concepts of Miyata in a single-piece cam ring such as that of Herbert. The two-piece cam of Miyata acts as a single cam during the radial displacement of the upper and lower segments as shown in Figure 2 of Miyata and discussed at col. 2, lines 49-52 and column 7, line 52 to column 8, line 2.

Second, I agree with the Examiner that the two-piece cam ring of Miyata is a "single cam ring" as claimed (Answer, p. 6). The Examiner's claim construction is reasonable (Id.). See In re Bigio, 381 F.3d 1320, 1324-25, 72 USPQ2d 1209, 1210-11 (Fed. Cir. 2004) ("During prosecution, however, the PTO gives claims their 'broadest reasonable interpretation.'"). As noted above, the two pieces of Miyata's actuator (4) act as one cam ring during the

camming action. There is nothing in the specification limiting the single cam ring to a single-piece cam ring.

Nor can I agree with Appellants that Miyata "teaches away" such that there is no suggestion or motivation to combine the teachings of Herbert and Miyata (Brief, p. 16). The two-piece actuator or cam ring of Miyata is not, as asserted by Appellants, provided to overcome a problem identified in Miyata as caused by a single cam ring. Rather Miyata discloses that the use of a two-piece tread mold overcomes problems with the one-piece tread mold shown in Figures 24 and 25 (Miyata, col. 1, ll. 11-47 together with col. 2, ll. 5-12) and that the use of only one pushing means, i.e., a spring or air cylinder, overcomes problems with biasing upper and lower segments by separate pushing means, i.e., springs or cylinders associated with each upper and lower segment (Miyata, col. 2, ll. 44-53). Moreover, Herbert places no particular criticality on the use of the cam configuration disclosed therein. Herbert states merely that it is "sufficient" to have one actuating mechanism which is attached to one mold segment (p. 2, ll. 44-49) and also indicates that the camming structure is merely a preferred embodiment, other forms of actuating mechanisms also being useful (p. 2, ll. 69-78). There is no teaching in either reference indicating that the

modification would be ineffective for radially displacing the tread mold segments as is desired.

There is some discussion of the desire of Miyata to limit the sliding distance of the molds upon opening and Appellants seem to be arguing that this disclosure is a teaching away from the use of a one-piece actuator (Reply Brief, pp. 3-4). While the sliding distance would be greater with the use of a one-piece cam ring in direct contact with both the upper and lower segments, the desired function, i.e., the radial displacement upon closing the mold, would still be accomplished. Whether the modification proposed by the Examiner is **more** desirable than the preferred cam arrangement of Herbert is a question that need not be addressed here. There is no requirement that a particular combination be the preferred, or most desirable, combination described in the prior art in order to provide motivation for the modification. In re Fulton, 391 F.3d 1195, 1200, 73 USPQ2d 1141, 1145 (Fed. Cir. 2004). Moreover, there is also a reason, suggestion or motivation for using the two-piece cam ring of Miyata in the mold of Herbert and that arrangement also meets the requirements of the claim. As discussed above, claim 1 does not exclude a two-piece cam ring.

Appellants further argue that there is no motivation to make the modification because the combination of the teachings of Herbert and Miyata would change the principle of operation of the mold of Herbert and/or render the mold of Herbert inoperable for its intended purpose (Brief, p. 17). This is because, according to Appellants, Herbert requires the engagement of the upper and lower tread mold segments (42) and (10) with cooperating projections (81) and recesses (34). But as explained by the Examiner, Miyata demonstrates that the use of projections and recesses is compatible with a cam ring in direct engagement with both the upper and lower tread mold segments (Answer, p. 7).

I conclude that the Examiner has established a case of prima facie obviousness with respect to claims 1, 2, 4, and 5 which has not been sufficiently rebutted by Appellants.

Claim 6

With respect to claim 6, again, Appellants' arguments center on the claim requirement that the cam ring be in direct engagement with both the upper and lower tread mold segments. For the reasons stated above, I am not persuaded by these arguments. I conclude that the Examiner has established a prima facie case of obviousness with respect to the subject matter of claim 6 which has not been sufficiently rebutted by Appellants.

Appeal No. 2005-0246
Application No. 09/431,154

Because, in my view, the Examiner has established a prima facie case of obviousness with respect to the subject matter on appeal which Appellants have not sufficiently rebutted, I would affirm the decision of the Examiner to reject claims 1-6.



CATHERINE TIMM
Administrative Patent Judge

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Appeal No. 2005-0246
Application No. 09/431,154

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APPENDIX

1. A vulcanizing mold for pneumatic tires, comprising:

upper and lower base plates;

upper and lower sidewall mold members for forming tire sidewall portions, said upper and lower sidewall mold members being attached to said upper and lower base plates, respectively;

upper and lower tread mold members for forming a tire tread portion, said upper and lower tread mold members being attached to said upper and lower base plates, respectively;

said upper and lower tread mold members being constituted of upper segments and lower segments, respectively, said upper and lower segments being displaceable only radially relative to said upper and lower sidewall mold members, respectively;

a spring that urges the lower segments radially outwards; and

a single cam ring in direct engagement with the upper and lower tread mold members, the single cam ring being displaceable independently of approaching displacements of said sidewall mold members toward each other, to thereby simultaneously displace all of said upper and lower segments radially inwards while the single cam ring remains in direct engagement with the upper and lower tread mold members and while said upper and lower segments are in abutment with each other.